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FISH & RICHARDSON PC P.O. BOX 1022 MINNEAPOLIS, MN 55440-1022			ADAMS, GREGORY W	
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			3652	
DATE MAILED: 10/03/2005				

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/664,694

Applicant(s)

WHITCOMB, PRESTON

Examiner

Gregory W. Adams

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 June 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-42 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-42 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-4, 7-12, 29-37 and 39-40 are rejected under 35 U.S.C. 102(b) as being anticipated by Shamlou et al. (US 6,024,393).

With respect to claim 1, referring to FIGS. 1-9 Shamlou et al. '393 disclose a system for handling substrates 40 comprising a robot and arm (col. 8, Ins. 36-37), processor, end effector 204, blade 100, active area 205, passive gripper 116, and active gripper 120. Further, Applicant is respectfully reminded that claim language consisting of functional language and/or intended use phrasing is given little, if any, patentable weight as the apparatus must merely be capable of functioning, or being used, as claimed. See MPEP 2112.02, 2114. Here, Shamlou's active area is capable of sensing distances.

With respect to claim 2, referring to FIGS. 1-9 Shamlou et al. '393 disclose an end effector 204 with a mapping sensor 104a, 104b. Col 3, Ins. 49-52.

With respect to claim 3, referring to FIGS. 1-9 Shamlou et al. '393 disclose a silicon wafer blade 100. Col 9, Ins. 32-34.

With respect to claim 4, referring to FIGS. 1-9 Shamlou et al. '393 disclose a ceramic blade.

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With respect to claim 7, referring to FIGS. 1-9 Shamlou et al. '393 disclose an active area 205 formed on the blade in metallization process. Col. 9, Ins. 32-34. It is noted that no patentable weight is given to method of manufacture within apparatus claims.

With respect to claim 8, referring to FIGS. 1-9 Shamlou et al. '393 disclose an active area 205 that provides vertical location. Col. 3, Ins. 49-52.

With respect to claim 9, referring to FIGS. 1-9 Shamlou et al. '393 disclose a measurement transducer. Col. 3, Ins. 49-52.

With respect to claim 10, referring to FIGS. 1-9 Shamlou et al. '393 disclose a capacitance probe. Col. 3, Ins. 49-52.

With respect to claim 11, referring to FIGS. 1-9 Shamlou et al. '393 disclose an inductive sensor. Col. 3, Ins. 49-52.

With respect to claim 12, referring to FIGS. 1-9 Shamlou et al. '393 disclose three sensors 104a, 104b, 110 as denoted by surface area 205.

With respect to claim 29, referring to FIGS. 1-9 Shamlou et al. '393 disclose a robotic end effector 204 comprising a mapping sensor 104a, a blade 100, an active area 205, passive gripper 116, and active gripper 120.

With respect to claim 30, referring to FIGS. 1-9 Shamlou et al. '393 disclose an active area 205 formed on the blade in metallization process. Col. 9, Ins. 32-34. It is noted that no patentable weight is given to method of manufacture within apparatus claims.

With respect to claim 31, referring to FIGS. 1-9 Shamlou et al. '393 disclose sensor 104a,104b for detecting the mean vertical position. Col. 3, Ins. 49-52.

With respect to claim 32, referring to FIGS. 1-9 Shamlou et al. '393 disclose three sensors 104a,104b,110.

With respect to claim 33, referring to FIGS. 1-9 Shamlou et al. '393 disclose an active area 205 that provides vertical location. Col. 3, Ins. 49-52.

With respect to claim 34, referring to FIGS. 1-9 Shamlou et al. '393 disclose an active area 205 and measurement transducer 106a,106b.

With respect to claim 35, referring to FIGS. 1-9 Shamlou et al. '393 disclose an active area 205 and capacitance probe 104a,104b,105a,105b.

With respect to claim 36, referring to FIGS. 1-9 Shamlou et al. '393 disclose an inductive sensor 104a,104b,105a,105b,106a,106b.

With respect to claim 37, referring to FIGS. 1-9 Shamlou et al. '393 disclose a mapping sensor 104a,104b. Col. 3, Ins. 49-52.

With respect to claim 39, referring to FIGS. 1-9 Shamlou et al. '393 disclose a disclose a silicon wafer blade 100. Col 9, Ins. 32-34.

With respect to claim 40, referring to FIGS. 1-9 Shamlou et al. '393 disclose a ceramic blade.

3. Claims 21-25 and 27-28 are rejected under 35 U.S.C. 102(b) as being anticipated by Bacchi et al. (US 6,618,645).

With respect to claim 21, referring to FIGS. 1-9 Bacchi et al. '645 disclose moving a robot arm 16, determining and then storing the coordinate information of the

substrates, sequentially indexing the robotic arm, measuring the distance to the substrate, and engaging the substrate. Col. 11, Ins. 15-61.

With respect to claim 22, referring to FIGS. 1-9 Bacchi et al. '645 disclose coordinate information of vertical location. Col. 11, In. 52-53.

With respect to claim 23, referring to FIGS. 1-18 Bacchi et al. '645 disclose providing a robotic arm 16, mapping sensor 30, end effector 10, and substrate sensor 84,86, moving the first sensor 30 proximate to the cassette 14, recording the vertical substrate location, generating a pick table, sequentially indexing the robotic arm, engaging the cassette 14 with the end effector 10, verifying the substrate position with the second sensor 84, and capturing and removing the substrate. Col. 11, Ins. 15-61.

With respect to claim 24, referring to location data "to within 135 microns" it is well known within the art of substrate handling that high tolerances are preferred.

With respect to claim 25, referring to substrate location "to within 100 microns" it is well known within the art of substrate handling that high tolerances are preferred.

With respect to claim 27, referring to FIGS. 1-9 Bacchi et al. '645 disclose a robotic arm 16, end effector 10, blade 10, active area 50.

With respect to claim 28, referring to FIGS. 1-9 Bacchi et al. '645 disclose a passive gripper 24 and active gripper 50.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

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invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 5-6, 41-42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shamlou et al. (US 6,024,393).

With respect to claim 5, referring to FIGS. 1-9 Shamlou et al. '393 disclose the end effector blade 100 except for limiting the thickness to less than 1000 microns. It would have been obvious to one having ordinary skill in the art at the time the invention was made to limit the blade 100 thickness to less than 1000 microns, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

With respect to claim 6, referring to FIGS. 1-9 Shamlou et al. '393 disclose a referring to FIGS. 1-9 Shamlou et al. '393 discloses the end effector blade 100 except for limiting the thickness to less than 750 microns. It would have been obvious to one having ordinary skill in the art at the time the invention was made to limit the blade 100 thickness to less than 750 microns, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

With respect to claim 41, referring to FIGS. 1-9 Shamlou et al. '393 discloses the end effector blade 100 except for limiting the thickness to less than 1000 microns. It would have been obvious to one having ordinary skill in the art at the time the invention was made to limit the blade 100 thickness to less than 1000 microns, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

With respect to claim 42, referring to FIGS. 1-9 Shamlou et al. '393 disclose a referring to FIGS. 1-9 Shamlou et al. '393 discloses the end effector blade 100 except for limiting the thickness to less than 750 microns. It would have been obvious to one having ordinary skill in the art at the time the invention was made to limit the blade 100 thickness to less than 750 microns, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

6. Claims 13-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shamlou et al. (US 6,024,393) in view of Bacchi et al. (US 6,618,645). As noted above Shamlou et al. '393 recite claims 1-12.

With respect to claim 13, Shamlou et al. does not disclose pneumatic active gripper. Referring to FIGS. 1-9 Bacchi et al. '645 disclose pneumatic gripper 50 as a retrofit to existing robot arm end effectors 10 in addition to providing active contact by the end effector 10 within an exclusion zone. Col. 2, Ins. 10-24. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to add pneumatic gripper to active gripper of Shamlou et al., as taught by Bacchi et al., such that existing end effectors may be retrofitted in addition to providing active contact by the end effector 10 within the exclusion zone.

With respect to claim 14, Shamlou et al. does not disclose a servo gripper with linear motor. Referring to FIGS. 1-9 Bacchi et al. '645 disclose a servo gripper 52 and linear motor 56 to provide active contact by the end effector 10 within an exclusion zone. Col. 2, Ins. 10-24. Therefore, it would have been obvious to one of ordinary skill in

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the art at the time the invention was made to add servo gripper and linear motor to active gripper of Shamlou et al., as taught by Bacchi et al., such that existing end effectors may provide active contact by the end effector 10 within the exclusion zone.

With respect to claim 15, Shamlou et al. does not disclose feedback from active gripper to processor. Referring to FIGS. 1-9 Bacchi et al. '645 disclose a active feedback from active gripper 50 to processor 476. Col. 7, ln. 65. Bacchi et al. disclose that a processor detects the extended and retracted positions depending on relationships between active griper 50, sensors of active area 30 and substrate. Col. 2, lns. 40-50. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to add feedback from active gripper to process of Shamlou et al., as taught by Bacchi et al., such that the extended and retracted positions are detected depending on relationships between active griper, sensors of active area and substrate.

With respect to claim 16, Shamlou et al. does not disclose feedback to the processor. Referring to FIGS. 1-9 Bacchi et al. '645 disclose active feedback from active gripper 50 to processor 476. Col. 7, ln. 65. Bacchi et al. disclose that feedback to a processor for control of among other data comprising substrate center. Col. 2, lns. 40-50. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to add feedback of data to a substrate handling system of Shamlou et al., as taught by Bacchi et al., such that the processor may control data comprising the substrate center.

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7. Claims 17-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shamlou et al. (US 6,024,393) in view of Cheng (US 6,164,894). As noted above Shamlou et al. '393 recite claims 1-12.

With respect to claim 17, Shamlou et al. '393 does not disclose a substrate prealigner. Cheng '894 discloses a prealigner for use in a system for handling substrates held in a carrier including a substrate prealigner 16 having a prealigner chuck 86. Cheng '894 discloses a prealigner and prealigner chuck to locate the center of a wafer within a fast, precise automated wafer handling system to increase wafer yields. Col. 1, Ins. 14-36. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to prealign a substrate within the systems of Shamlou et al., as taught by Cheng, to locate the center of a wafer within a fast, precise automated wafer handling system to increase wafer yields.

With respect to claim 18, Shamlou et al. '393 does not disclose a prealigner chuck having embattlements. Cheng '894 discloses a prealigner chuck 84 having embattlements 84,88. Cheng '894 discloses a prealigner chuck and embattlements to support a substrate within a fast, precise automated wafer handling system to increase wafer yields. Col. 1, Ins. 14-36. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to prealign a substrate within the systems of Shamlou et al., as taught by Cheng, to locate the center of a wafer within a fast, precise automated wafer handling system to increase wafer yields.

With respect to claim 19, Shamlou et al. '393 does not disclose a sized prealigner chuck. Cheng '894 discloses a sized prealigner chuck 84. Cheng '894 discloses a sized

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prealigner chuck to locate the center of a wafer within a fast, precise automated wafer handling system to increase wafer yields. Col. 1, Ins. 14-36. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to size the prealigner chuck within a system of Shamlou et al., as taught by Cheng, to locate the center of a wafer within a fast, precise automated wafer handling system to increase wafer yields.

With respect to claim 20, Shamlou et al. '393 does not disclose a prealigner chuck with holes. Cheng '894 discloses a prealigner chuck 84 having plurality of holes, col. 7, Ins. 32-34, to retain a substrate to a chuck 86. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to had a prealigner chuck with holes to a system of Shamlou et al., as taught by Cheng, to retain a substrate to a chuck.

8. Claim 26 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bacchi et al. (US 6,618,645) in view of Cheng (US 6,164,894).

With respect to claim 26, Bacchi et al. '645 does not disclose a substrate prealigner step. Cheng '894 discloses a prealigner step after cassette removal to locate the center of a wafer within a fast, precise automated wafer handling system to increase wafer yields. Col. 1, Ins. 14-36. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to prealign a substrate within the system Bacchi et al., as taught by Cheng, to locate the center of a wafer within a fast, precise automated wafer handling system to increase wafer yields.

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9. Claim 38 is rejected under 35 U.S.C. 103(a) as being unpatentable over Shamlou et al. (US 6,024,393) in view of Hsiao (US 6,040,585). As noted above Shamlou et al. '393 recite claims 29-37. Shamlou et al. do not disclose a laser transducer. Hsiao '585 discloses a laser transducer 52 to sense whether the blade and wafer orientation. Col. 5, Ins. 24-25. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize laser sensors for the end effector of Shamlou et al. as taught by Hsiao, such that the blade and wafer orientation are sensed.

Response to Arguments

1. Applicant's arguments filed June 13, 2005 have been fully considered but they are not persuasive.
2. With respect to claims 1 & 23, applicant argues that Shamlou does not disclose an active area, but as noted above Shamlou's active area is capable of sensing distances by virtue of its ability to sense whether a wafer is present through active capacitance. And as noted above under claim 1 the recitation of structure "for..." is not a positive recitation accorded patentable weight. In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., prevention of bowing or warping and "...vertical zone determination occupied by the substrate in the input cassette...") are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re*

Van Geuns, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993). Further, applicants argument that essentially Shamlou's handling will not prevent bowing or warping is not a feature which applicant claims, nor a problem Shamlou fails to recognize.

3. With respect to claim 21, applicant argues essentially that Bacchi does not disclose measuring all wafers at once, but does disclose positioning an end effector relative to a wafer and cassette. Applicant concedes this in its remarks on page 13, lines 13-17. Applicant apparently distinguishes detecting presence and proximity, suggesting the former does not require X-Y-Z coordinates. Taken as true, Bacchi recites storing coordinate information on a per wafer basis, and subsequently articulating an end-effector based on those coordinates. Bacchi solves the problem of knowing where a wafer is relative to a cassette or other obstacles which may ultimately cause an end effector to damage a wafer or may create contamination within a clean environment. It is noted that Bacchi solves this problem on a per wafer basis. It is further noted that Bacchi discloses an active gripper 150.

4. With respect to claim 23, applicant argues Bacchi does not map a wafer. Bacchi discloses locating a wafer bottom, although periphery, to minimize damage in retrieval and because spacing between wafers contained within a wafer cassette is minimal. Cols. 1-2. IN other words, Bacchi discloses a sequential mapping via controller (col. 11, lns. 15-50). In response to applicant's argument that Bacchi does not resolve or address bowing or warping, a recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art

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structure is capable of performing the intended use, then it meets the claim. Applicant further argues recording of cassette parameters such as slot angle, but has not claimed this feature thus it is not accorded patentable weight.

5. With respect to claims 5-6, 41-42, 13-16, 17-20, 26 & 28 applicant essentially argues that the deficiencies in claims 1, 21 & 23 fail to render these claims obvious in light of the modifying reference or references. Applicant's arguments fail to comply with 37 CFR 1.111(b) because they amount to a general allegation that the claims define a patentable invention without specifically pointing out how the language of the claims patentably distinguishes them from the references. With respect to claim 26, the replacement of "unpatentable over" with "anticipated" in the Non-Final Office Action dated December 13, 2004 is overcome by the recitation of the proper statutory section and correct art. Applicant recognized as much in its arguments on page 15, lines 21-25.

Conclusion

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

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the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gregory W. Adams whose telephone number is (571) 272-8101. The examiner can normally be reached on M-Th, 8:30-6.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eileen Lillis can be reached on (571) 272-6928. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

GWA



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